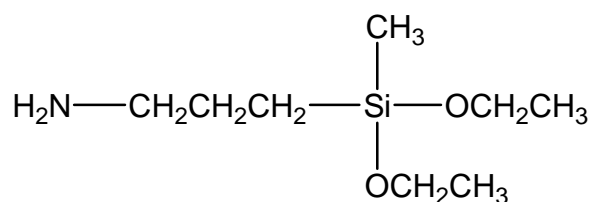


SiSiB[®] PC1120

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gamma-Aminopropylmethyldiethoxysilane



PC1120 acts as an adhesion promoter between inorganic materials and organic polymers, as a surface modifier and for material changes to chemical substances.

It is a colorless to yellowish liquid with an amine-like odor which is soluble in alcohols and aliphatic and aromatic hydrocarbons.

Typical Physical Properties

Chemical Name	<i>gamma</i> -Aminopropylmethyldiethoxysilane
CAS No.	3179-76-8
EINECS No.	221-660-8
Empirical Formula	C ₈ H ₂₁ NO ₂ Si
Molecular Weight	191.3
Color and Appearance	Colorless transparent liquid
d ₄ 20°C	0.916
Boiling Point	88°C [15mmHg]
Refractive Index	1.4272 [20°C]
Flash Point	68°C
Min. Purity	98.0%

Application

PC1120 is an important or even essential constituent in many applications. PC1120 is particularly important as an additive to cold-curing phenolic and furan foundry resins to improve the flexural strength of sand/resin elements with very long shelf life of the resins.

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Further examples are:

- Glass fiber/glass fabric composites: as size constituent or finish
- Glass and metal primers
- Abrasives: as additive to phenolic resin binders
- Sealants and adhesives: as primer or additive and for chemical modification
- Mineral-filled composites: for pretreatment of fillers and pigments or as additive
- Synthesis of functional silicones

The most important effects which can be achieved using PC1120 are improvements in product properties, such as

- Adhesion
- Mechanical properties, for example flexural strength, tensile strength, impact strength and modulus of elasticity
- Moisture and corrosion resistance
- Electrical properties, for example dielectric constant, volume resistivity

And improvements in processing properties, such as

- Better filler dispersion
- Rheological behavior: reduction in viscosity, Newtonian behaviour
- Higher degree of filling

Reactivity

PC1120 is a bifunctional organic compound in which the silicon-functional OC_2H_5 -groups hydrolyze in the presence of water to give ethanol and the corresponding reactive silanols, which can be bonded to an inorganic substrate; the organophilic amino group can interact with a suitable polymer.

The hydrolysis of PC1120 takes place autocatalytically in a short time of about 5-10 minutes. Hydrolysates having a concentration of < 5% are stable for more than 72 hours.

The pH is about 11.

Examples of suitable inorganic substrates are glass, glass fibres, glass wool, mineral wool, silicic acid, quartz, sand, cristobalite, wollastonite and mica; also suitable are aluminium hydroxide, kaolin, talc, other silicate fillers, metal oxides and metals.

Examples of suitable polymers are epoxy resins, polyurethanes, phenolic resins, furane

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resins, melamine resins, PA, PBT, PC, PEK, PE, EVA, PP, PVB, PVAC, PVC, acrylates and silicone.

PC1120 can undergo reactions with ketones or esters as solvents. Silane or silanized substrates can react with carbon dioxide to form the corresponding carbonates resp. carbamates. Product modifications are possible through addition reactions with suitable monomeric or polymeric compounds (for example isocyanates, epoxides, etc.) or by co-condensation with polysiloxanes.

Processing

For substrate pretreatments or as a primer, PC1120 can be employed as an approximately 0.5-10 percent solution in organic solvents, such as alcohols and as constituent of aqueous sizes or liquors. It may also be used as a pure substance or added to the polymer as an additive. Chemical modification can be achieved by reaction with suitable functional monomers or polymers, for example those containing isocyanate or epoxy groups, or with polysiloxanes.

Packaging and Storage

PC1120 is supplied in 180 kg internally coated steel drums.
In the unopened drum PC1120 has a shelf life of at least 1 year.